OPERATIONS SUPPORT SYSTEMS

8. Operations support systems are the computer-based systems and data bases that telecommunications carriers use to provide essential customer and business support functions. These systems support a variety of carrier interactions with customers, including those related to (1) pre-ordering activities such as determining the customer's existing service, address verification, determining the availability of new services and features that might meet the customer's needs, telephone number assignment, and establishing a due date for service; (2) ordering services; (3) provisioning of service; (4) repair and maintenance; and (5) billing for service.

9. The accuracy, timeliness and completeness of the information used and maintained by operations support systems are critical to a carrier's efforts to satisfy its customers. Because the timeliness and reliability of support systems is so vital to providing and maintaining quality service to end-users, the performance of these systems is extremely important. Support systems that are slow to respond or unreliable undermine a carrier's efforts to ensure customers get the services they request when they request them. Quite simply, a carrier cannot conduct its business effectively or efficiently without strong, well-designed and well-developed operations support capabilities.

10. The establishment of efficient interfaces and procedures for the exchange of information between the operations support systems of Ameritech and AT&T and other CLECs is absolutely essential for the development of competition in the provision of local services. AT&T and other CLECs entering the local market on a large scale will be highly dependent upon their ability to efficiently obtain local services and unbundled network elements from Ameritech, which will depend in turn on the efficient exchange of information between AT&T and Ameritech relating to all of the OSS functions described above. Because so much of the information required by competitors resides exclusively in Ameritech's

operations support systems, Ameritech is in a unique position to control the ability of its competitors to enter the local services market and become an effective competitor.

AMERITECH'S OPERATIONS SUPPORT SYSTEMS OFFERINGS

11. Ameritech has stated that it will provide at least nine separate OSS interfaces, each supporting a different function or combination of functions. Thus, Mr. Mickens states that Ameritech will provide a pre-ordering transactional interface (EDI), a pre-ordering batch interface (file transfer), an ordering transactional interface (EDI), an ordering batch interface (ASR), a provisioning interface, a maintenance and repair interface, a usage billing information interface (EMR), a services resale billing information interface (AEBS), and a UNE billing information interface (CABS) (Mickens Aff., pp. 17).

12. Ameritech's operations support system interfaces are not presently in a state of operational readiness. Attached as Exhibit 1 is a matrix which depicts the status of the electronic operational support systems development separately for resale and the platform. As this exhibit illustrates, none of the needed systems interfaces are currently in a state of operational readiness and only certain interfaces have begun to be tested on an integrated basis. I discuss this exhibit in further detail later in my statement.

13. The interfaces to several of Ameritech's critical pre-ordering operating support systems were still not deployed in the field or available to CLECs for testing as of mid-December 1996. Even assuming that those interfaces have now been deployed, however, those interfaces have never been made available for use or testing by AT&T to determine whether they will provide the nondiscriminatory access to Ameritech's operations support systems that is required under the FCC's orders.

14. The specifications for several of Ameritech's proposed OSS interfaces for service resale have been repeatedly revised over recent months and are still being revised or clarified by Ameritech. None of the specifications other than usage Data are yet in a final

form, making design of AT&T's systems to interact with Ameritech's systems a moving target.

15. Because of these and other problems, only a very limited amount of integration testing between Ameritech and AT&T has been conducted at this time, and those testing routines are still far from complete. Moreover, the limited testing of Ameritech's interfaces that has been conducted to date by AT&T has revealed a number of problems in system interaction.

16. Discussions to date between AT&T and Ameritech have centered largely around the interfaces to be used for resale services. The discussions related to the purchase of unbundled network elements, and more importantly, combinations of unbundled network elements (the platform) have been only extremely preliminary in nature. In large part this is because AT&T and Ameritech cannot agree on how the platform will be provisioned operationally. That disagreement makes it very difficult to have menaingful discussions about how the ordering interfaces should be designed. Moreover, because there are no UNE-P tariffs or any AT&T/Ameritech interconnection agreements, AT&T is not yet in a position to order UNE-P unbundled network elements.

THE AVAILABILITY OF AMERITECH'S PROPOSED OSS INTERFACES

17. The testimony submitted by Ameritech in this case is ambiguous on the question of the present availability of some of Ameritech's proposed OSS interfaces.

18. In supplemental rebuttal testimony filed in Illinois on Friday, December 13, 1996, and submitted in this case on Monday, December 16, 1996, Ameritech's witness Mr. Rogers states that Ameritech's proposed interfaces for a number of pre-ordering functions, including access to customer service records, access to telephone number selection and assignment, due date selection and access to information regarding changes in service order status, are still "under development" and are only "scheduled for commercial deployment" in December 1996 (Rogers Supplemental Rebuttal Illinois Testimony, pp. 5, 15, 26). Mr.

Rogers also states that the interfaces required for the provisioning of resold service is still not complete (id. at 11).

19. Similarly, the affidavit of Ameritech's Mr. Dunny, submitted in this case on December 16, 1996, states that Ameritech's interfaces for the pre-ordering, ordering and provisioning functions "are currently being upgraded" and "will be made available on or before January 1, 1997" (Dunny Aff., pp. 31-32).

20. The affidavit of Ameritech's Mr. Mickens, on the other hand, also filed on December 16, 1996, states that all of these OSS interfaces are now deployed by Ameritech (Mickens Aff., pp. 16-17, 19-20).

OPERATIONAL READINESS

21. Operational readiness is the end state of a systems development effort. It is achieved when the systems are providing useful results according to design, and it is the culmination of a successful systems design process.

22. An interface between two systems is operationally ready when the two systems work together satisfactorily with the underlying systems on both sides of the interface to deliver the services for which the interface was designed.

23. Operationally ready systems interfaces have been tested by systems developers and users on both sides of the interface under testing criteria designed to simulate market conditions. Operational readiness cannot simply be unilaterally declared by Ameritech because Ameritech is only one of the interface users. Both users must work together to establish that the interfaces are operationally ready.

24. An "interface" is the nexus between two separate operations support systems. Specification documents, like those recently published by Ameritech, attempt to define the inputs and outputs that will allow the systems of two entities to communicate with each other. Once the inputs and outputs are defined through the specifications, the CLEC must

undertake comprehensive systems development activities in an effort to modify its own OSS capabilities to complement Ameritech's systems.

25. These systems development activities usually occur in several steps: systems analysis, specification refinement, system design, system development, system testing, integration testing, training and implementation.

26. The first step is systems analysis. In this step, the goals are analyzed so the specific processing needs can be laid out in broad measure. Determinations of the business functions that the system must address are made as well as preliminary decisions as to which are to be computerized and which will be manual processes. The analysis of the overall systems and the business needs cause questions to be raised on what data definitions apply, the conditions under which information is required or optional, and whether information must be obtained from data bases, supplied by customers, validated or accepted as is. Hundreds of questions are the norm, not the exception. These questions are ordinarily reviewed with the suppliers of the input and output transactions.

27. The systems analysis step is followed by a specification refinement activity. In this activity, the details and definitions of data elements, records and data bases are actually updated, recognizing that the initial specifications were not universally understood. Specification refinement can take several iterations before the parties find that all questions are resolved and no further definition is required.

29. The next step is the system design phase. The design effort takes into consideration the technical environment for the system, the various regional or local exceptions, the daily/weekly/monthly processing issues to be addressed and more. The system will be broken down into modules that are logical components for computer processing or manual methods and procedures development.

30. Once the system is designed, the actual systems development (i.e., programming) efforts are begun. Systems development is where programmers and data base

developers get to work coding the modules. The manual activities are also developed which require methods and procedures analysts to work with job or task designers to place the manual activities into logical sequences. These efforts also result in the design of forms, screens and reports. The merging of computerized modules and manual procedures are then followed by testing that is best accomplished through a structured manner and discipline.

31. System testing is the step that bears out the design and programming. Testing must separately validate the construction and development of the individual modules, the programs which comprise many modules, the systems that comprise many programs and, on an integrated basis, all of the components, both computerized and manual, under a variety of conditions. System testing demonstrates both that the system components perform according to the design of what should happen, but it also serves to demonstrate capacities or constraints in terms of volumes, seasonal differences, special processing periods and the like.

32. When systems are developed for the purpose of working with other systems, which is the case for AT&T's operations support systems and the interfaces which connect them to Ameritech's systems, the two complementary systems must also be tested in a joint manner to ensure that they will communicate properly with each other. This is referred to as end-to-end, or full integration testing. This is the opportunity for the entire spectrum of testing to be accomplished in an environment that is "safe" from customer consequence.

33. Testing must be accompanied by sufficient training to be certain that staff knows how to operate the system, to interact with the screens, forms. Accommodations must also be made for administrative functions -- i.e., the data bases must be backed up appropriately in the normal course of operations.

34. Once all these preliminary steps have been taken the system can move into the implementation phase. This phase is less complicated for a newly constructed system than it is for system change or replacement. The process of converting data bases from one system

to another is indicative of the types of additional complications that can arise during the implementation phase.

35. Once the implementation phase has been successfully completed, the systems are operationally ready.

36. In the case of Ameritech's proposed OSS interfaces, operational readiness is achieved only when the two systems are able to communicate with each other over the interface in an accurate, reliable and timely manner. As my description of the several steps involved in the process of developing compatible and operationally ready operations support systems and systems interface makes clear, far more is required than simply the sharing of technical interface specifications. The process of developing working operations support systems and interfaces is a complex and time-consuming process involving both the systems and data bases on the Ameritech side of the interface, the operations support systems on the AT&T side of the interface, and the interface itself which allows the systems on both sides to effectively communicate with each other.

PRESENT STATUS OF AMERITECH'S OSS INTERFACES

37. As I indicated earlier in my statement, in order to show the present status of Ameritech's OSS interfaces from AT&T's perspective, I have prepared a matrix which is attached as Exhibit 1 to my affidavit. In the left column of this matrix, I have listed the OSS interfaces proposed by Ameritech broken down by the principal OSS functions. Across the top of the chart, I have identified some of the key steps that are required in order to achieve operational readiness. The first page of the chart addresses the proposed OSS interfaces for service resale, and the second page is addressed to the OSS interfaces for the UNE platform.

INTERFACE SPECIFICATIONS

38. As shown on the first page of Exhibit 1, AT&T has received initial specifications from Ameritech for all of the OSS functions for service resale.

39. In several instances, however, AT&T has also received one, two, or even four specification revisions.

40. For example, between July 3, 1996, and November 8, 1996, Ameritech published four separate revisions to the specifications for its ordering interface for service resale. Moreover, the new specifications did not highlight changes from the previous versions, which means that AT&T was required to make line-by-line comparisons to identify the differences.

41. Further, when AT&T met with Ameritech on December 18, 1996, to discuss a series of questions and concerns that needed to be addressed, Ameritech agreed to produce a revised specification for POTS resale in early January and presumably will follow up at a later date with interface specification revisions to address other types of resold services. The resale ordering specifications, which have undergone the most scrutiny and analysis, are thus still being updated.

42. The specifications for some of Ameritech's other OSS interfaces are in a still more preliminary state. For example, Mr. Rogers states that the proposed interface for a number of essential pre-ordering functions, including access to customer service records, telephone number selection and assignment, due date selection, and access to service order status information were still "under development" as of mid-December 1996 (Rogers Supplemental Rebuttal Illinois Testimony, pp. 5, 15, 26).

43. As Exhibit 1 indicates, I do not believe that AT&T has received final specifications for any of Ameritech's proposed OSS interfaces other than for the EMR interface for the transfer of customer usage data.

44. The many changes that Ameritech has made to its OSS interface specifications over the last few months and the further changes promised, has serious consequences for AT&T's ability to compete in the local service market. Until Ameritech's interface specifications are finalized, AT&T's ability to design its operations support systems to

interface with Ameritech's systems is severely limited. Moreover, AT&T cannot obtain the assurance that it will be able to offer a high quality of service to its customers which it requires before it can actually enter the local market and begin offering service on a large-scale basis in Ameritech's service areas.

BUSINESS RULES

45. In order to communicate effectively with Ameritech's operations support systems and have its transactions processed, AT&T also requires additional information about the operation of Ameritech's systems. AT&T must also ascertain and adhere to Ameritech's unique "business rules" and procedures.

46. Ameritech's business rules are not simply a document, but are instead the amalgamation of Ameritech's practices, standards, tariff interpretations, competitive policies, methods and procedures, and unique system design parameters. These business rules, which are not generally reflected in the technical specifications, define valid relationships in the creation and processing of service orders. For example, AT&T must determine whether Ameritech's business rules allow order numbers to be duplicated, require information on the customer's PIC, and/or require a specific format for directory listings. Only when a service order is issued using this set of Ameritech-mandated business rules, all of which are within Ameritech's exclusive control, will the service order be completed in Ameritech's systems as requested and as promised to the customer by AT&T.

47. Ameritech's business rules and procedures are not always the same as those used by AT&T, and, initially, the AT&T systems only had access to AT&T's business rules -- not Ameritech's. AT&T and Ameritech may have different views on issues that relate to order numbers, PIC contents, USOC relationships, etc. If AT&T's rules are not synchronized with Ameritech's, the service requests will not be successfully processed in Ameritech's systems.

48. AT&T has been able to determine some of Ameritech's business rules, but only through a painstaking process of trial and error. In the recent service readiness testing of Ameritech's service resale ordering interface, for example, many of the orders submitted by AT&T were rejected by Ameritech's systems because they were formatted consistent with AT&T's business rules, but were unknowingly inconsistent with Ameritech's business rules. Although AT&T is learning Ameritech's business rules and, through the integration testing process, incorporating them into its processes and procedures, ironing out all the kinks is an extremely time-consuming process.

49. This process is further complicated by the fact that, contrary to Ameritech's contentions, Ameritech's OSS interface specifications do not always adhere to industry standards. For example, Ameritech insists on adhering to EDI Version 5.0 in its definition of its ordering interface when the other six Regional Bell Operating Companies ("RBOCs") and the rest of the telecommunications industry is deploying ordering interfaces at the EDI Version 6.0 level. To ensure that it could timely enter the local services market in Ameritech's service areas, therefore, AT&T was required to create additional computer systems to translate its ordering transactions to the earlier Version 5.0 standard.

50. Similarly, there are provisions in Ameritech's ESO Guideline (Version 3.0, November 8, 1996 "to be effective January 6, 1997") which identify numerous areas in which industry standards are essentially over-ridden by Ameritech-adopted conventions. For instance, contrary to all other ILEC requirements, Ameritech's specifications for 850 transactions for reseller contact name and telephone number note that, while this segment is optional in TCIF documentation, it is mandatory for Ameritech orders. Thus, failure to place an entry in this field will cause an Ameritech rejection.

51. Furthermore, there are no industry standards. There are standard guidelines developed by the Ordering and Billing Forum (OBF), by Bellcore, and the Telecommunications Industry Forum, but those standards are very loosely defined to allow

flexibility in the design of industry systems. Thus, while Ameritech claims that its specifications are consistent with industry standards, the degree of consistency has been and continues to be a significant issue. Indeed, the single most significant problem that AT&T has encountered while attempting to deploy operations support systems is that Ameritech has unique systems which compel unique OSS specifications and business rules. AT&T has been required to rely on integration testing to identify Ameritech's unique system parameters and design its complementing systems and its side of the interface to meet the Ameritech standards and business rules.

52. The lack of clear standards has created serious problems for AT&T in the development and testing of its own complementary operations support systems. A good example of this is in the area of processing changes to previously issued purchase orders. Under the EDI standards, changes to previously issued purchase orders are made via an "860 transaction." AT&T and Ameritech have designed their systems in a manner that are both consistent with that standard yet differ from each other.

53. Ameritech's design for processing 860 transactions requires that an 860 be used to update or change the underlying purchase order (an "850 transaction") that is already in queue. Thus, when the Ameritech system receives an 860, it looks for the predecessor 850 and relies on the predecessor order to effect the changes in the purchase order transaction.

54. AT&T's existing systems were designed to take a different approach. AT&T's business customers tend to submit many changes in the ordering process. AT&T therefore designed its systems to restate the entire order when a customer requests a change prior to completion of the original order. This procedure requires the 860 to find the underlying 850 and "refresh" its contents completely. Therefore, at any time, the 860 will show all of the newest and most current customer requests, irrespective of the content of the original order.

55. Although both of these design approaches are technically consistent with the EDI standards, they are, in fact, very different. These differences caused problems in the

interface. AT&T sent 860s to Ameritech believing that Ameritech's systems would "refresh" the underlying 850, but instead, when Ameritech's system received the 860, its system rejected the 860 as a duplicate.

56. AT&T was unable to anticipate and design around this problem because it did not have access to the Ameritech business rules which would have allowed AT&T the opportunity to design its 860 transaction in a manner that complements Ameritech's processing. Instead, the systems design approaches were not shared until after the first 860 was sent to Ameritech -- too late for simple design changes to be made. Moreover, because this problem was not encountered until the integration testing phase, I believe other 850/860 types of translation problems may yet to be encountered.

57. More importantly, these problems cannot be anticipated in advance because Ameritech is still unwilling to share its business rules, and because the CLECs have no bargaining power or leverage in this relationship, they cannot force Ameritech to cooperate. Thus, design problems must simply be encountered, by trial and error, in the testing phase and then work-arounds must be developed -- an approach which will require AT&T to expend substantial additional time and cost in its efforts to get its operations support systems to work with Ameritech's OSS interfaces.

INTERFACE TESTING

58. To date, the only integration testing that has been done by AT&T with Ameritech's proposed OSS interfaces has been limited to the service resale ordering interface and related provisioning and billing functions. The results of those tests are described in the testimony of Mr. Rogers initially filed by Ameritech in the Illinois proceeding (Rogers Supplemental Rebuttal Illinois Testimony, pp. 19-23 & Schedule 1). As I indicated above, that testing has led to changes to both companies' procedures. As a result of those changes in the companies systems and operations, integration testing of the service resale ordering interface has not yet been completed.

59 Much of Mr. Rogers' testimony is devoted to explaining that the number of AT&T orders rejected using the electronic ordering systems in current testing was due to errors on AT&T's side of the interface. This is beside the point. The point is that, to date, only a small number of orders have passed through the Ameritech interfaces and most of those did not pass through the system without errors.

60. In 2 1/2 months of testing in Illinois (from October 6 to December 20), only a total of 211[1] AT&T orders have been processed by Ameritech. Of those 211, only 79 were completed. One half of these orders were rejected. The results of testing as of December 20, 1996 are as follows:

[1] This information used to report testing results in the testimony was taken from Ameritech testing reports. The actual number of "transactions" processed and the status of any single transaction at any particular time can be recorded in a variety of ways. Nonetheless, for purposes of consistency and convenience, I have adopted Ameritech's methodology for reporting testing results, and its results, in this testimony.

Order Transactions Processed	211	**Percentage**
Orders Rejected	109	51%
Orders Completed	79	38%
Orders Pending	23	11%
Orders Processed Manually	105	50%
Rejected	28	27%
Completed	55	52%
Pending	22	21%
Orders Processed Automatically	106	50%
Rejected	81	76%
Completed	24	23%
Pending	1	1%

These results demonstrate that the systems are far from being operationally ready. The Service Readiness Testing Results are attached as Exhibit TMC-02.

61. A further serious concern for AT&T revealed during the testing of the service resale ordering interface is the fact that many of the orders sent by AT&T during the integration testing process were not being processed electronically, but were "falling out" to manual processes. Of the 211 test orders processed as of December 20, 1996, 50 percent have been processed using manual procedures by Ameritech.

62. This use of manual intervention is very troublesome and unacceptable as the basis for market entry on the scale planned by AT&T. Experience shows that manual processes are incapable of handling large volumes of transactions and are likely to stress Ameritech's ability to deliver timely and efficient services.

63. Ameritech's exhibits confirm these systems deficiencies. In Mr. Rogers' Schedule 1, he identifies the number of orders processed through November 26. According to that document, of the 67 orders processed during that time period, 47 (or 68%) required manual intervention by Ameritech--that is, they were not processed relying exclusively on electronic interfaces.

Order Transactions Processed	157	**Percentage**
Orders Rejected	90	57%
Orders Processed	67	43%
Orders Processed Manually	69	44%
Rejected	22	32%
Processed	47	68%
Orders Processed Automatically	88	56%
Rejected	68	77%
Completed	20	23%

64. My understanding is that AT&T personnel involved in testing have asked repeatedly for explanations of what gives rise to the requirement for manual processes. Ameritech has not provided sufficient information (i.e., the Ameritech business rules) to reduce this manual intervention on a systematic basis. Obviously, that information would be freely shared if a "team" concept were at work here.

65. There has been no significant improvement throughout the testing process. The Service Readiness Test Results Exhibit TMC-03, from November 7, 1996 show that the processing of orders has been consistently error-prone and manually intensive:

Order Transactions Processed	109	**Percentage**
Orders Rejected	63	58%
Orders Completed	37	34%
Orders Pending	9	8%
Orders Processed Manually	55	50%
Rejected	20	36%
Completed	28	51%
Pending	7	13%
Orders Processed Automatically	54	50%
Rejected	43	80%
Completed	10	18%
Pending	1	2%

66. In sum, the systems in question are very complex: Unless there is a true commitment to work together instead of finding fault, there will be delays in making services available, the quality of competitive services will slip and local competition may in fact be prevented. It does not appear from their testimony that Ameritech has made that commitment with AT&T. If better results were experienced, it is reasonable that AT&T would have extended the testing process to validate additional types or volumes of PIC orders to increase the confidence it needs in trying to enter the local services market.

It is unknown if other CLECs have received sufficient assistance from Ameritech. increasing their ability to interact with Ameritech's systems and interfaces.

67. Moreover, even if all 211 orders had been processed flawlessly -- which did not happen -- this number stands in stark contrast to the total number of orders which could be processed by the proven operational support systems to switch long distance customers to Ameritech should Ameritech be granted interLATA authority.

INTERFACES FOR UNBUNDLED NETWORK ELEMENTS AND THE UNE PLATFORM

68. Although Ameritech has provided an initial specification for ordering and provisioning a few individual network elements such as number portability and switching, no specifications have been provided for the ordering or provisioning of the UNE platform or other UNE combinations. Ameritech has not provided specifications for the pre-ordering, repair and maintenance, or billing functions for unbundled network elements or the UNE platform.

69. To date, Ameritech has refused to provide the UNE platform as requested by AT&T. Ameritech has imposed a number of restrictions and limitations on its unbundled switching element provided as a part of the platform. For example, Ameritech has taken the position that AT&T is not entitled to bill for terminating access. Consistent with this position, Ameritech has not provided any specifications for an interface that would provide AT&T with the billing information that it would require to bill for terminating access.

70. Contrary to Mr. Mickens' statement, the ASR interface, which was designed to receive access orders from interexchange carriers, is not suitable for the large scale provisioning of unbundled network elements. That interface is a batch interface which

was never intended for the purpose of provisioning unbundled network elements. When systems are used for purposes other than those intended in the original design, those systems need to be modified and/or refined to meet the new needs.

NONDISCRIMINATORY ACCESS TO OPERATIONS SUPPORT SYSTEMS

71. Even if Ameritech's proposed OSS interfaces were in a condition of operational readiness, that would not establish that Ameritech was actually providing AT&T and other CLECs with non-discriminatory access to its operations support systems. Ameritech must show more than that it is providing the CLECs with access to its operations support systems; it must show that the access being provided is nondiscriminatory.

72. To make this showing of nondiscriminatory access, the access provided by Ameritech must be monitored to show that Ameritech's interfaces actually provide the CLECs with access to its systems having an equivalent level of accuracy, reliability and timeliness as the access that Ameritech provides to its own customer service agents.

73. To establish that Ameritech is providing nondiscriminatory access to its operations support systems, a series of performance measurements and reporting mechanisms are needed. The appropriate measurement criteria and reporting mechanisms are addressed in the affidavit of C. Michael Pfau.

CONCLUSION

74. Ameritech has not established that it is providing nondiscriminatory access to CLECs to all of its operations support systems for both service resale and unbundled network elements.

Timothy M. Connolly

Information Systems Consulting Assignments

1991 to 1996

For a Tokyo-based telecommunications carrier -- evaluated customer billing, customer service, accounts receivable and collections systems for technical capacity and operations stability under three planning scenarios related to expansion of market share; provided recommendations, documentation and presentation to senior management team.

For South American joint venture partners -- performed due diligence evaluations of information technology facilities, software applications portfolios, staff and security systems; provided assessment reports to joint venture partners.

For a Middle-East telecommunications and financing company -- conducted systems evaluations and operational readiness evaluations in connection with market entry for credit/debit card calling services; provided traffic and revenue projections, determined technology requirements and security systems for card issuance and monitoring.

For a US-based long distance carrier -- evaluated and analyzed the carrier's five (5) year international expansion plane; developed the customer service operations plan and system acquisition and operations recommendations for the carrier's entry in the European resale market.

For a Canadian long distance carrier -- proposed the customer service and billing systems and operations requirements to support the carrier's expansion plan for entry in additional provinces; for network services migration to intelligent networks; for extension of services to residential customers

For a private Canadian-provincial carrier -- developed its long distance expansion business plan; produced detailed plans and schedules for network elements, back office systems, staffing, sales campaigns and market evaluation systems

For a California-based economic development authority -- designed and proposed acquisition alternatives for its on-line, Internet-supported international telecommunications and information systems platforms

For a San Francisco-based non-profit organization -- designed, developed and implemented its business plan, market development plan, financial plan, technology plan and telecommunications marketing technology requirements including telemarketing programs

STATUS OF ELECTRONIC OPERATIONAL SUPPORT SYSTEMS DEVELOPMENT: RESALE

Ameritech Interface/Function	Initial Specs Received	# Of Spec Versions Received	Final Specs Received	Integration Testing Begun	Integration Testing Complete	Operational Readiness
Pre-Ordering						
Address Verification	√	2				
Feature Availability	√	2				
Customer Service Record (CSR) [1]	√	2				
Telephone Number Assignment	√	2				
Due Date Selection	√	2				
Ordering [2]	√	4		√		
Provisioning						
Firm Order confirmation	√	4		√		
Order Status (870)	√	1				
Order Completion	√	4		√		
Repair & Maintenance	√	1				
Billing						
AEBS Charges	√	1		√		
Usage Data (EMR)	√	1	√	√		

A "√" means a "Yes" response.

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1 Ameritech has made an interim process available for accessing CSRs, but this process does not provide information on a real-time basis.

2 Several problems have developed in connection with the "specs" that Ameritech has provided for resale ordering. These problems include (a) the provision of new specs that fail to highlight changes from the previous version (necessitating line-by-line comparisons); and, (b) specs that are not developed in a manner that permits AT&T to prepare its related methods and procedures, order flows and system interfaces (i.e., its business rules). For example, the 11/8/96 issuance of the resale order spec generated over 75 AT&T questions/concerns that must be resolved before operational testing can be completed. In a 12/18/96 meeting on OSS, Ameritech acknowledged that its ordering spec failed to include all necessary information and agreed to produce another revised spec by 1/6/97 dealing with resold POTS. Specs for services other than POTS services will presumably be developed subsequently. Spec revisions for other OSS functions are also likely.

Status as of 1/6/97.

STATUS OF ELECTRONIC OPERATIONAL SUPPORT SYSTEMS DEVELOPMENT: PLATFORM ("UNE-P")

Ameritech Interface/Function	Initial Specs Received	# Of Spec Versions Received	Final Specs Received	Integration Testing Begun	Integration Testing Complete	Operational Readiness
Pre-Ordering						
Address Verification	√	2				
Feature Availability						
Customer Service Record (CSR)						
Telephone Number Assignment	√	2				
Due Date Selection						
Ordering [3]						
Provisioning [3]						
Firm order confirmation						
Order status (870)						
Order completion						
Repair & Maintenance [4]						
Billing [5]						
AEBS charges						
CABS Bill						
Usage data (EMR)	√	1	√			

A "√" means a "Yes" response.

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[3] An initial specification has been provided for Ordering and Provisioning a few individual elements such as number portability and switching, but no Ordering and Provisioning specifications have been provided for the Platform. Disagreement between AT&T and Ameritech over how the Platform will be provisioned makes interface development speculative.

[4] Ameritech has not yet provided Repair and Maintenance specifications for the Platform.

[5] Ameritech has not yet provided AEBS and CABS Billing specifications for the Platform.

Status as of 1/6/97.

T/Ameritech
Service Readiness Testing

For week ending 12/20

Order Processing Status

Category	Reason	Total Orders This Week	Total Orders To Date	Manual Process This Week # Orders	Manual Process This Week %	Manual Process To Date # Orders	Manual Process To Date %	Automatic Process This Week # Orders	Automatic Process This Week %	Automatic Process To Date # Orders	Automatic Process To Date %
Orders Rejected		14	109	4	29%	28	26%	16	114%	81	74%
	Invalid Order Date	0	4	0		0		0		4	
	TN is Invalid or No TN Match	0	3	0		2		0		1	
	Ameritech DB error, re-flowed	0	3	0		0		0		3	
	Order Number already exists	10	49	0		0		10		49	
	Order for existing AT&T account	0	12	0		12		0		0	
	PIC or LPIC error	0	8	0		3		0		4	
	Name match error	0	2	1		2		0		0	
	NPA/NXX not valid	0	7	0		0		1		7	
	Duplicate Request	0	2	0		2		0		0	
	Unknown USOC	0	5	0		0		0		6	
	Invalid Address	1	2	0		1		1		1	
	Invalid/Additional Listing OR RCL	1	3	0		1		1		2	
	Invalid Line Activity	2	3	0		0		2		3	
	Previous Completion	0	1	0		1		0		0	
	Order Pending	0	1	0		1		0		0	
	Invalid Due Date	0	1	0		1		0		0	
	Other	0	3	3		2		1		1	
Orders Completed		10	79	6	60%	55	70%	4	40%	24	30%
Orders Pending		22	23	21	95%	22	96%	1	5%	1	4%
Total Order Transactions Processed		46	211	31	67%	105	50%	21	46%	106	50%

NOT UPDATED IN 12/23 REPORT

855 Response Time Examples
10/7 to 12/13

Order Status	Process	Total	<=2	%	<=24	%	>24	%
Pending	Auto	2	1	50%	2	100%	0	0%
Pending	Manual	4	1	25%	4	100%	0	0%
Rejected	Auto	72	44	61%	61	85%	11	15%
Rejected	Manual	31	2	6%	17	55%	14	45%

ATT/Ameritech
Service Readiness Testing

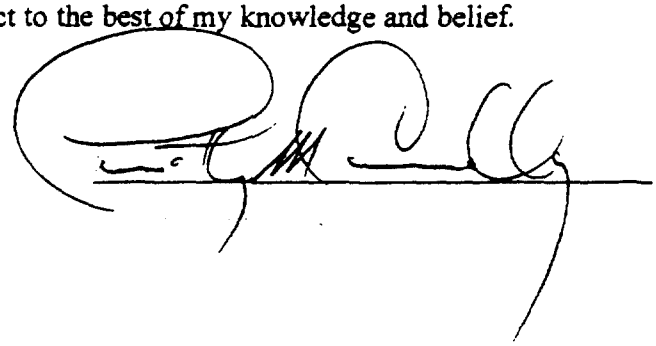
For week ending 11/7

Order Processing Status

Category / Reason	Total Orders This Week	Total Orders To Date	Manual Process This Week # Orders	Manual Process This Week %	Manual Process To Date # Orders	Manual Process To Date %	Automatic Process This Week # Orders	Automatic Process This Week %	Automatic Process To Date # Orders	Automatic Process To Date %
Orders Rejected	10	63	0	0%	20	32%	10	100%	43	68%
Invalid Order Date	0	2	0		0		0		2	
TN is invalid or No TN Match	0	2	0		2		0		0	
Ameritech DB error, re-flowed	0	1	0		0		0		1	
Order Number already exists	9	14	0		0		9		14	
Order for existing AT&T account	0	12	0		12		0		0	
PIC or LPIC error	0	3	0		3		0		0	
Name match error	0	1	0		1		0		0	
NPA/NXX not valid	1	3	0		0		1		3	
Duplicate Request	0	0	0		1		0		0	
No Reason Noted	0	1	0		0		0		0	
Unkown USOC	0	1	0		0		0		1	
Invalid Address	0	1	0		1					
Orders Completed	3	37	1	33%	28	76%	2	67%	10	27%
Orders Pending	2	9	2	100%	7	78%	0	0%	1	11%
Total Order Transactions Processed	**15**	**109**	**3**	**20%**	**55**	**50%**	**12**	**80%**	**54**	**50%**

VERIFICATION

I, Timothy Connolly, do on oath depose and state that the facts contained in the foregoing affidavit are true and correct to the best of my knowledge and belief.



SUBSCRIBED AND SWORN to
before me this 7th day of
January, 1997.

Margaret M. Plucinsky
Notary Public

"OFFICIAL SEAL"
Margaret M. Plucinsky
Notary Public, State of Illinois
My Commission Expires 05/11/99

SERVICE LIST
CASE NO. U-11104

AT&T Communications, Inc.
Joan Marsh
Cheryl Urbanski
227 W. Monroe - 13th Floor
Chicago, IL 60606

Continental Cable Vision
Timothy P. Collins
26500 Northwestern Highway - Suite 203
Southfield, MI 48076

Fischer, Franklin & Ford
George Hogg, Jr.
3500 Guardian Building
Detroit, MI 48226-3801

Foster, Swift, Collins & Smith, PC
Mark J. Burzych
313 S. Washington Square
Lansing, MI 48933

Fraser Trebilcock Davis & Foster, PC
David Marvin
Michael Ashton
1000 Michigan National Tower
Lansing, MI 48933

Hogan & Hartson
Linda Oliver
555 13th Street, NW
Washington, DC 20004

Clark Hill P.L.C.
Roderick Coy
Stewart Binke
200 N. Capitol Avenue - Suite 600
Lansing, MI 48933

Michigan Consumer Federation
Richard D. Gamber, Jr.
115 West Allegan - Suite 500
Lansing, MI 48933